## AMENDMENTS TO THE CLAIMS

- (Currently Amended) A method for detecting a nucleotide sequence in nucleic acid molecules comprising the following steps:
  - hybridization of nucleic acid molecules to a set of probes of different nucleobase sequences, wherein each probe has a mass that differs from the one of all the other probes;
  - (b) separation of the probes that are not hybridized to nucleotide sequences in the nucleic acid molecules;
  - (c) detachment of the probes that are hybridized to nucleotide sequences in the nucleic acid molecules in a solvent;
  - (d) analysis of the probes that are detached from step (c) by means of electrospray mass spectrometry; and
  - (e) detecting the nucleotide sequence in the nucleic acid molecules by means of the probes hybridized to the nucleotide sequence in said <del>nucleotide</del> <u>nucleic acid</u> molecules.
- 2. (Previously Presented) The method according to claim 1, wherein the nucleic acid molecules are immobilized at a surface of a support before or after step (a).
- 3. (Previously Presented) The method according to claim 2, wherein the immobilization of the nucleic acid molecules at the surface is carried out via a NH<sub>2</sub>, epoxy or SH function by means of coating the surface of the support with a silicate or silane, via a protein-substrate interaction, a protein-protein interaction, a protein-nucleic acid interaction or via an interaction of two hydrophobic building blocks.
- (Previously Presented) The method according to claim 3, wherein the protein-substrate interaction is by means of a biotin-streptavidin bond or an antibody-antigen bond.
- (Previously Presented) The method according to claim 3, wherein the protein-nucleic acid interaction is by means of a Gene32 protein-nucleic acid bond.

- 6. (Previously Presented) The method according to any one of claims 1 to 5, wherein the probes are nucleic acids having a mass tag.
- 7. (Previously Presented) The method according to claim 6, wherein the mass tag is also a charge tag.
- 8. (Previously Presented) The method according to claim 6, wherein the nucleic acids have a charge tag.
- (Previously Presented) The method according to claim 1, wherein the probes are modified nucleic acid molecules.
- (Previously Presented) The method according to claim 9, wherein the modified nucleic acid molecules are PNAs, alkylated phosphorothioate nucleic acids or alkylphosphonate nucleic acids.
- 11. (Withdrawn) The method according to claim 1, wherein the probes are generated by means of combinatorial solid phase synthesis.
- 12. (Withdrawn) The method according to claim 11, wherein different base building blocks are labelled whereby the probes synthesized therefrom can be differentiated in the mass spectrometer due to their mass.
- 13. (Withdrawn) The method according to claim 12, wherein the label is a methyl, ethyl, propyl, a branched or non-branched alkyl, a halogen substituted branched or non-branched alkyl, alkoxyalkyl, alkylaryl, arylalkyl, alkoxyaryl or aryloxyalkyl group or one of their deuterated or other isotopic variants.
- 14. (Previously Presented) The method according to claim 9, wherein the probes have at least one modification in a defined position which allows for the cleavage of the probe.

- 15. (Previously Presented) The method according to claim 14, wherein the probes are modified by introducing a phosphorothicate group, a RNA base, a phosphotriester bond or a combination thereof into the probe.
- 16. (Previously Presented) The method according to claim 1, wherein the probes are generated as partial libraries having different mass and/or charge tags.
- 17. (Previously Presented) The method according to claim 2, wherein the positions of the probes on the support allow for an allocation to the nucleic acid molecules hybridizing thereto.
- 18. (Previously Presented) A kit comprising
  - (a) a set of probes as defined in claim 6 and/or
  - (b) a probe support which has been pretreated and thus allows for the attachment of target DNAs and/or a probe support to which target DNAs have already been attached.
- 19. (Previously Presented) A method for detecting a nucleotide sequence in nucleic acid molecules comprising the following steps:
  - (a) hybridization of nucleic acid molecules to a test set of probes of different nucleobase sequences, wherein each probe has a mass that differs from the one of all the other probes, and wherein the probes are generated as partial libraries having different mass and/or charge tags;
  - (b) separation of the probes that are not hybridized to nucleotide sequences in the nucleic acid molecules;
  - (c) detachment of the probes that are hybridized to nucleotide sequences in the nucleic acid molecules in a solvent:
  - (d) analysis of the probes that are detached from step (c) by means of electrospray mass spectrometry; and

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- (e) detecting the nucleotide sequence in the nucleic acid molecules by means of the probes hybridized to the nucleotide sequence in the nucleic acid molecules.
- 20. (Previously Presented) A method for detecting a nucleotide sequence in nucleic acid molecules comprising the following steps:
  - (a) hybridization of nucleic acid molecules to a test set of probes of different nucleobase sequences, wherein each probe has a mass that differs from the one of all the other probes;
  - (b) immobilization of the nucleic acid molecules of at a surface of a support before or after step (a) using a NH<sub>2</sub>, epoxy or SH function by means of coating the surface of the support with a silicate or silane, via a protein-substrate interaction, a protein-protein interaction or an interaction of two hydrophobic building blocks;
  - (c) separation of the probes that are not hybridized to nucleotide sequences in the nucleic acid molecules;
  - (d) detachment of the probes that are hybridized to nucleotide sequences in the nucleic acid molecules in a solvent:
  - (e) analysis of the probes that are detached from step (d) by means of electrospray mass spectrometry; and
  - (f) detecting the nucleotide sequence of the nucleic acid molecules by means of the probes hybridized to the nucleotide sequences in the nucleic acid molecules.